



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P60206PCT	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/EP2005/000698	International filing date (day/month/year) 20.01.2005	Priority date (day/month/year) 29.01.2004	
International Patent Classification (IPC) or national classification and IPC H05K3/46, H05K3/18, H05K3/10			
Applicant ATOTECH DEUTSCHLAND GMBH et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 1 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  21.06.2005		Date of completion of this report  16.02.2006	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Batev, P  Telephone No. +49 89 2399-7970  	

BEST AVAILABLE COPY

INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITYInternational application No.  
PCT/EP2005/000698

---

**Box No. I Basis of the report**

---

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-37 as originally filed

**Claims, Numbers**

2-17 as originally filed

1 received on 21.06.2005 with letter of 17.06.2005

**Drawings, Sheets**

1/8-8/8 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/000698

---

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	none
Inventive step (IS)	Yes: Claims	1-17
	No: Claims	none
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	none

2. Citations and explanations (Rule 70.7):

**see separate sheet**

---

**Box No. VII Certain defects in the international application**

---

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

---

**Box No. VIII Certain observations on the international application**

---

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following document:

D1: US 2002/129972 A1 (KONRAD JOHN JOSEPH ET AL) 19 September 2002  
(2002-09-19)

1. Document D1 discloses (paragraphs 18 - 39; figs. 1a - 1d) a method of manufacturing a circuit carrier, the method comprising the following steps:
- a) providing a substrate 1;
  - b) coating the substrate on one side thereof with a dielectric 2;
  - c) structuring the dielectric for producing trenches and vias 3 therein, using laser ablation;
  - d) depositing a primer layer 4 into the produced trenches and vias only;
  - e) depositing a metal layer 5 onto the primer layer, with the trenches and vias being completely filled with metal for forming conductor structures therein.

Thus, the subject matter of claim 1 differs from this known method at least in that

- i) in step a) a printed circuit board is provided instead of a substrate; and
- ii) the trenches produced in step c) do not extend completely through the dielectric.

Consequently, the subject matter of claim 1 is new (Article 33(2) PCT).

2. Even if the skilled person interchanged the substrate in step a) of the known method with a circuit board, e.g. a single sided board, and used the side free of conductors as an equivalent to using a substrate, he would not arrive at the subject matter of claim 1 as he has no incitement to provide trenches which do not extend completely through the dielectric.

None of the other cited documents, which reflect the technological background, discloses or gives an incitement to the specific solution proposed in claim 1.

In view of the available prior art, the subject matter of claim 1 appears, therefore, to involve an inventive step (Article 33(3) PCT).

3. Claims 2 - 16 which define preferred embodiments of the invention are dependent on

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/EP2005/000698

claim 1 and as such also meet the requirements of the PCT in respect of novelty and inventive step.

Independent claim 17 is directed to an use of the method defined in claim 1. Its subject matter is therefore also new and inventive.

**Re Item VII**

**Certain defects in the international application**

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein (see also the Guidelines, paragraph 4.05).

**Re Item VIII**

**Certain observations on the international application**

1. The last paragraph on page 36 of the description implies that the subject matter for which protection is sought may be different to that defined by the claims. This results in lack of clarity of the claims (Article 6 PCT) when the description is used to interpret them (see the Guidelines, paragraph 5.30).

\*\*\*\*\*

PCT/EP2005/000698  
Atotech Deutschland GmbH  
17.06.2005

EPO - DG 1

21. 06. 2005

(65)

## Claims:

1. A method of manufacturing a circuit carrier, said method comprising the following method steps:

5

- a) Providing a printed circuit board;
- b) Coating the circuit board on at least one side thereof with a dielectric;
- c) Structuring the dielectric for producing trenches and vias therein using laser ablation, the trenches not extending completely through the dielectric;
- d) Depositing a primer layer onto the entire surface of the dielectric or depositing the primer layer into the produced trenches and vias only;
- e) Depositing a metal layer onto the primer layer, with the trenches and vias being completely filled with metal for forming conductor structures therein; and
- f) Removing the metal layer and the primer layer, except for in the trenches and vias, to expose the dielectric if the primer layer has been deposited onto the entire surface in method step d).

10

15

20